

Dual N-channel Enhancement Mode Power MOSFET

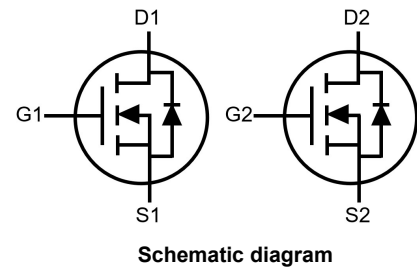
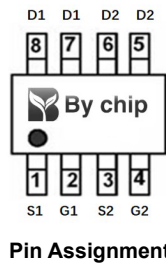
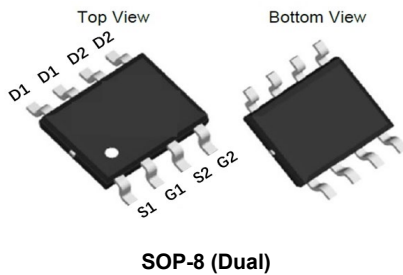
Features

- $V_{DS} = 30V$, $I_D = 9A$
 $R_{DS(ON)} < 16\text{ m}\Omega$ @ $V_{GS} = 10V$
 $R_{DS(ON)} < 24\text{ m}\Omega$ @ $V_{GS} = 4.5V$

General Features

- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free and Green Available

100% UIS TESTED!
 100% ΔV_{ds} TESTED!



Maximum ratings, at $T_J = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage	30	V
I_S	Diode continuous forward current	$T_A = 25^\circ\text{C}$ 2.3	A
I_D	Continuous drain current @ $V_{GS} = 10V$	$T_A = 25^\circ\text{C}$ 9	A
		$T_A = 100^\circ\text{C}$ 5.7	A
I_{DM}	Pulse drain current tested ①	$T_A = 25^\circ\text{C}$ 36	A
EAS	Avalanche energy, single pulsed ②	9	mJ
P_D	Maximum power dissipation	$T_A = 25^\circ\text{C}$ 2	W
V_{GS}	Gate-Source voltage	± 20	V
MSL		Level 3	
T_{STG} T_J	Storage and operating temperature range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JL}$	Thermal Resistance-Junction to Lead	40	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ\text{C/W}$

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(Tc=25°C)	V _{DS} =30V, V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125°C)	V _{DS} =30V, V _{GS} =0V	--	--	100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1		2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance ②	V _{GS} =10V, I _D =8A	--		16	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance ②	V _{GS} =4.5V, I _D =4A	--		24	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	--	455	--	pF
C _{oss}	Output Capacitance		--	75	--	pF
C _{rss}	Reverse Transfer Capacitance		--	60	--	pF
R _g	Gate Resistance	f=1MHz	--	3.3	--	Ω
Q _g	Total Gate Charge	V _{DS} =15V, I _D =8A, V _{GS} =10V	--	11	--	nC
Q _{gs}	Gate-Source Charge		--	3	--	nC
Q _{gd}	Gate-Drain Charge		--	4	--	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =15V, I _D =8A, R _G =3Ω, V _{GS} =10V	--	7	--	ns
t _r	Turn-on Rise Time		--	10	--	ns
t _{d(off)}	Turn-Off Delay Time		--	22	--	ns
t _f	Turn-Off Fall Time		--	7	--	ns
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	I _{SD} =8A, V _{GS} =0V	--	0.9	1.2	V
t _{rr}	Reverse Recovery Time	T _J =25°C, I _{sd} =8A, V _{GS} =0V	--	9.5	--	ns
Q _{rr}	Reverse Recovery Charge	di/dt=500A/μs	--	11.8	--	nC

NOTE:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH, R_G = 25Ω, I_{AS} = 6A, V_{GS} = 10V. Part not recommended for use above this value
- ③ Pulse width ≤ 300μs; duty cycle ≤ 2%.

Typical Characteristics

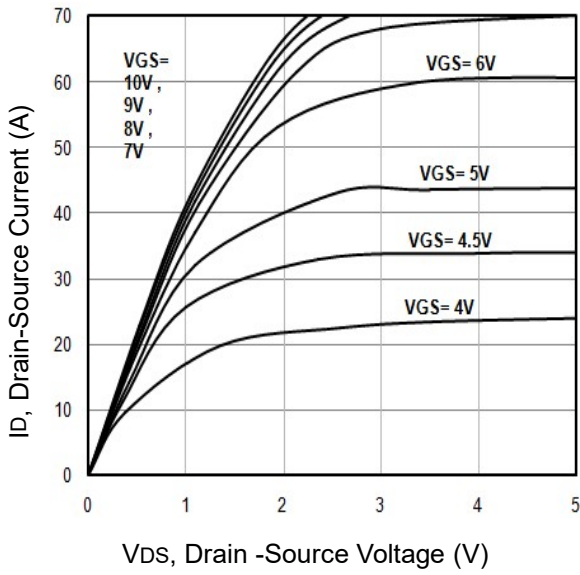


Fig1. Typical Output Characteristics

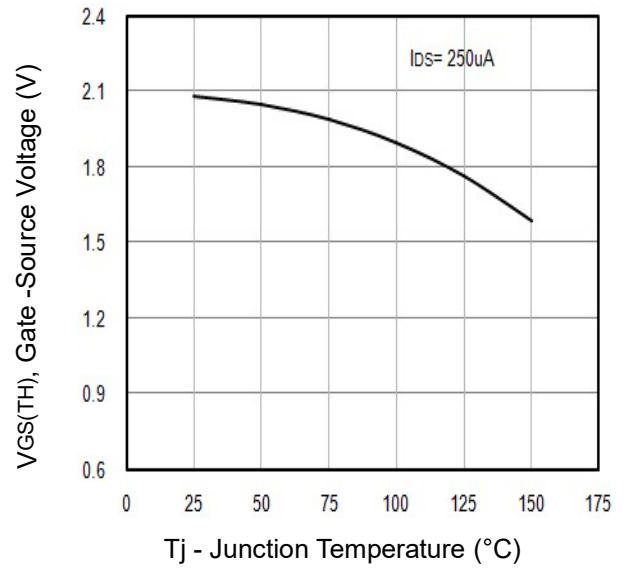


Fig2. Threshold Voltage Vs. Temperature

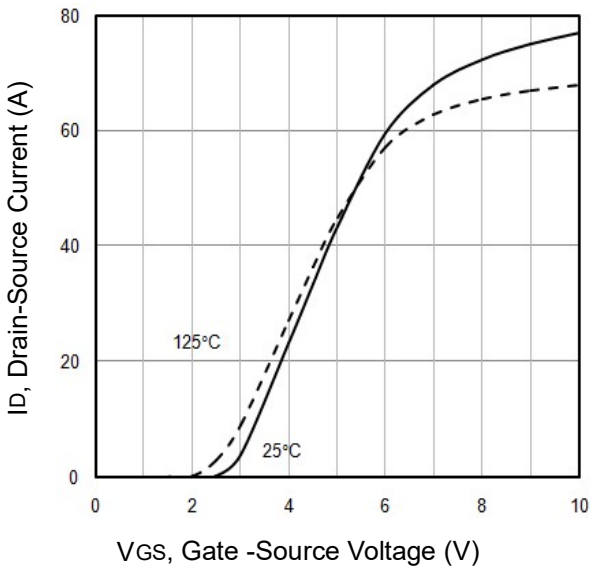


Fig3. Typical Transfer Characteristics

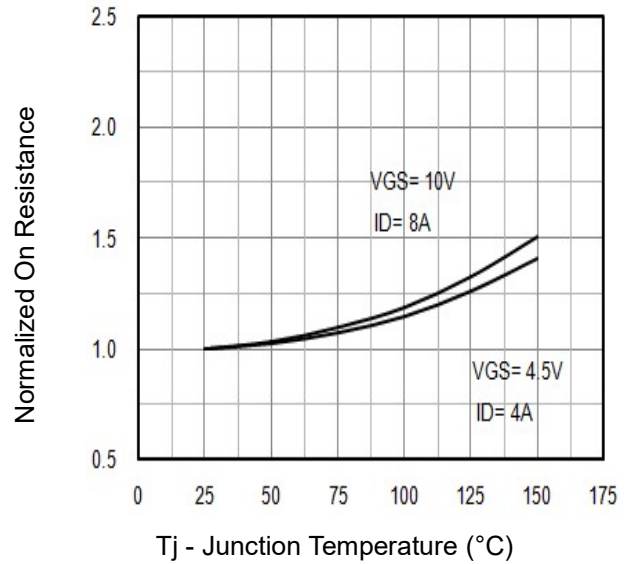


Fig4. Normalized On-Resistance Vs. Temperature

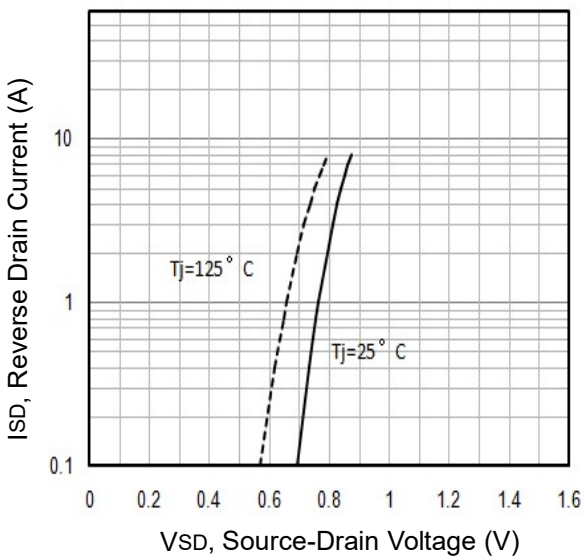


Fig5. Typical Source-Drain Diode Forward Voltage

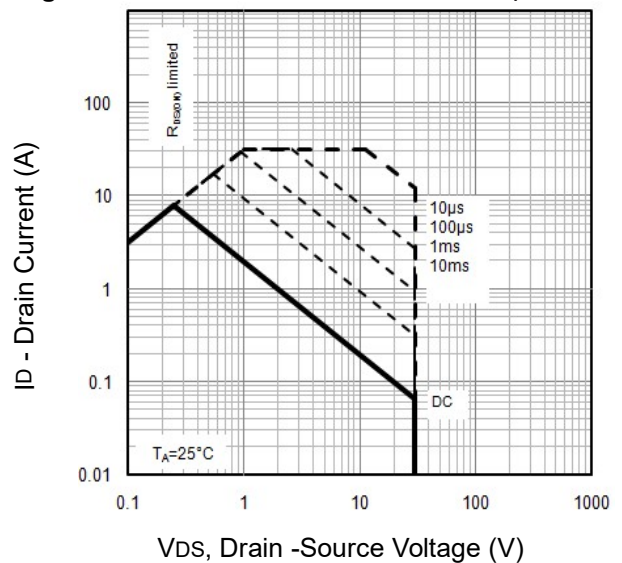


Fig6. Maximum Safe Operating Area

Typical Characteristics

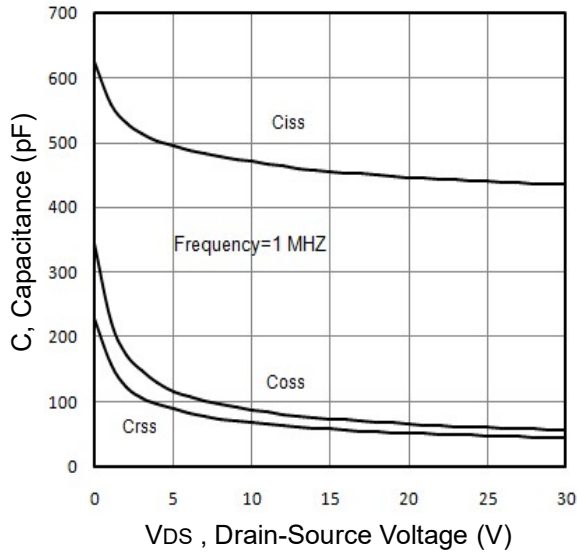


Fig7. Typical Capacitance Vs.Drain-Source Voltage

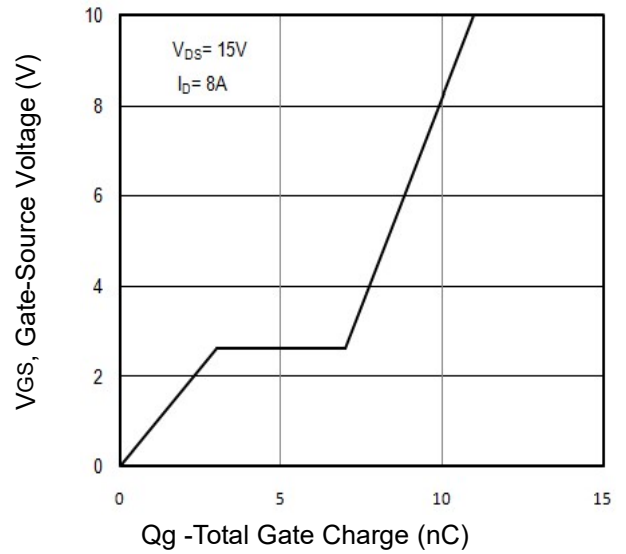
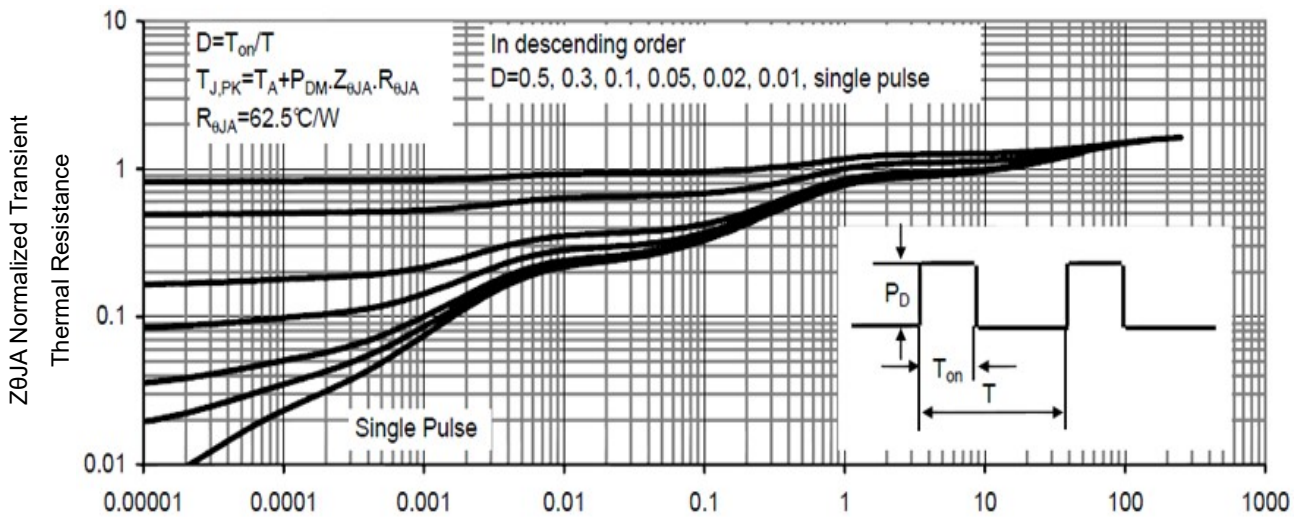


Fig8. Typical Gate Charge Vs.Gate-Source Voltage



T1, Square Wave Pulse Duration(sec)

Fig9. T1, Transient Thermal Response Curve

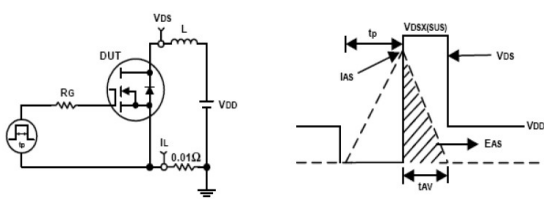


Fig10. Unclamped Inductive Test Circuit and waveforms

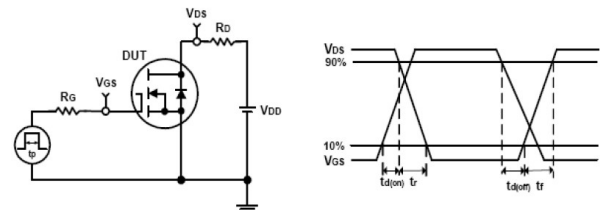


Fig11. Switching Time Test Circuit and waveforms